

Work Order ID 55542

January 20, 2010 8:58:47 AM

Page 1

Item ID: D412-664-203TRN

Accept

Setup Start

Revision ID:

Stop

Item Name: Crosstube Turning Detail

Start Date: 1/20/10 Start Qty: 1.00

Cust Item ID:

Required Date: 1/29/10 Req'd Qty: 1.00

Customer:

Reference:

Run Start

Approvals: Process Plan:

Date: 10-1-20 Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

Draw Nbr

Revision Nbr

D412-664-243

Rev E

100

0.00



Mori Seiki

MORI SEIKI CNC LATHE LARGE

Memo

0.00

Mori Seiki CNC Lathe Large

1-Fill tube with sand & install plugs DT8534 on both ends as per Folio FA166
2-Turn first side as per Folio FA166
3- File transition lines smooth.

MB 10-01-25

110

QC1- Inspect dimensions to dimension sheet

0.00



QC

Memo

0.00

Quality Control

MB 10-01-25

120

0.00



Mori Seiki

MORI SEIKI CNC LATHE LARGE

Memo

0.00

Mori Seiki CNC Lathe Large

1-Turn second side as per Folio FA166
2- File transition lines smooth.
3- Remove sand and plugs
4-Scribe part # and batch # using vibrating stilus

MB 10-01-25

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Run Start

Approvals: Process Plan: Date:

Tooling:

Date:

QC: Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw Draw Plan Accept Reject Reject Insp.
Number Number Code Qty Qty Number Stamp

130

QC1- Inspect dimensions to dimension sheet

0.00



QC

Memo

0.00

Quality Control

aml/ 10-1-25

140

QC8- Inspect parts - second check

0.00



QC

Memo

0.00

Quality Control

1 - - AWM 10-1-26

150

Crosstubes Chemical Conversion

0.00



HandFXtube

Memo

0.00

Hand Finishing Crosstubes

1 - - AWM 10-1-26

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Run Start

Approvals: Process Plan:

Date:

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

160

QC3- Inspect Part Finish

0.00

QC

Memo

0.00

Quality Control

10/1/26

170

Packaging

0.00

Packaging

Memo

0.00

Packaging

Identify and stock in kanban rack

Location: X-TUBS

CELL

1 - AWM 10-1-26

180

QC21- Final Inspection - Work Order Release

0.00

QC

Memo

0.00

Quality Control

10/01/26
Mr 10-1-26

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Picklist Print

January 20, 2010 8:58:51 AM

Page 1

Work Order ID: 55542



Parent Item: D412-664-203TRN



Parent Item Name: Crosstube Turning Detail

Start Date: 1/20/10

Required Date: 1/29/10

Comments: IPP Rev:A 08-03-06 new issue DD verified by:eec
IPP Rev B 08.04.02 Removed polish EC verified by: DD

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D6009-129		Manufactured	No			120	Each	18.0000	1.0000			



Crosstube Material



MD

12-01-25

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

LG

18

38342

18

TV

W/O:		WORK ORDER CHANGES					
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NOTE: Date & initial all entries

DART AEROSPACE LTD		Work Order:	55542
Description: Crosstube Assembly (412 High Aft)		Part Number:	D412-664-243
Inspection Dwg: D412-664-243 Rev: DE		Page 1 of 1	

FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	2.684	+0.005/-0.000	2.688 ✓			
	2.748	+0.005/-0.000	2.752 ✓			
	2.884	+0.005/-0.000	2.889 ✓			
	3.019	+0.005/-0.000	3.024 ✓			
	3.163	+0.005/-0.000	3.168 ✓			
	3.308	+0.005/-0.000	3.312 ✓			
	3.429	+0.005/-0.000	3.433 ✓			
	2.990	+0.005/-0.000	2.993 ✓			
	2.618	+0.005/-0.000	2.622 ✓			
	0.200	+/-0.010	.200 ✓			
	R0.063	+/-0.010	.063 ✓			
	R0.500	+/-0.010	0.500 ✓			
	4.971	+/-0.030	4.975 ✓			
SIDE B	2.684	+0.005/-0.000	2.688 ✓			
	2.748	+0.005/-0.000	2.753 ✓			
	2.884	+0.005/-0.000	2.888 ✓			
	3.019	+0.005/-0.000	3.024 ✓			
	3.163	+0.005/-0.000	3.168 ✓			
	3.308	+0.005/-0.000	3.313 ✓			
	3.429	+0.005/-0.000	3.434 ✓			
	2.990	+0.005/-0.000	2.991 ✓			
	2.618	+0.005/-0.000	2.622 ✓			
	0.200	+/-0.010	.200 ✓			
	R0.063	+/-0.010	R.063 ✓			
	R0.500	+/-0.010	R.500 ✓			
	4.971	+/-0.030	4.975 ✓			
124.10		+/-0.020	124.100 ✓			

Measured by: <i>MLT</i>	Audited by: <i>AWM</i>	Prototype Approval:	N/A
Date: 10/01/25	Date: 10-1-26	Date:	N/A

Rev	Date	Change	Revised by	Approved
A	04.06.16	New Issue (P/O D412-664-203)	KJ/JLM	
B	06.03.09	Dwg Rev updated	KJ/JLM	
C	07.05.08	Tolerance updated for dimension 4.971	KJ/JLM	

W/O:		WORK ORDER CHANGES					
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NOTE: Date & initial all entries

Item	Qty -243	Part Number	Description
1	X	D412-664-243	CROSSTUBE ASSEMBLY (412 HIGH AFT)
2	1	D6009-129	CROSSTUBE
3	2	D3595-063-570	RUBBER CUSHION
4	1	D2896-1	SUPPORT
5	2	D3189-1	CHAFING SHIELD
6	2	D2856-600-1009	ABRASION STRIP
7	4	MS21920-28	CLAMP
8	2	MS21920-30	CLAMP (OR MS21920-32)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

- MATERIAL: MANUFACTURED FROM D6009-129
FINISHED LENGTH = 124.100±0.020 (BEFORE BENDING/TRIMMING)
- FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- UNITS: INCHES UNLESS OTHERWISE NOTED.
- BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- IDENTIFICATION: SCRIBE DART PART NUMBER "D412-664-243" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- WEIGHT: 47.0 lbs (PER IIN-D212-664)
- PART IS SYMMETRIC ABOUT CENTERLINE.
- RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- INSTALL D2896-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2896-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- INSTALL MS21920-30 CLAMPS (OR -32) WITH D3595-063-570 RUBBER CUSHIONS TO SECURE THE D2896-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT.
- INSTALL D2856-600-1009 ABRASION STRIPS WITH A 0.13 REF GAP ON BOTTOM SIDE OF CROSSTUBE PER QSI 035.
- EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 53542

PH/10-1-20

RELEASED
2009-10-29

E	REFORMAT/REVISE GENERAL NOTES; REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS. RELOCATED FLAG #6 PER PAR 08-046 (ZN A6-3); ADD TOLERANCE (ZN B6-3, C4-3, C8-3 & C5-3); MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4.	RF	09.09.30
D	REMOVE D2732-058, CHANGE TO D3595-063-570	PH	07.03.09
C	REMOVE D2856-600-1087, ADD D2732-058 & MAGNOBOND 6398, MS21920-32 WAS MS21920-30	MB	06.10.27
B	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	PH	05.02.04
A	NEW ISSUE	PH	01.10.17
REV.	DESCRIPTION	BY	DATE
DESIGN	PH	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF		
CHECKED	PH	DRAWING NO.	REV. E
MFG. APPR.	PH	D412-664-243	SHEET 1 OF 4
APPROVED	PH	TITLE	SCALE
DE APPR.	PH	CROSSTUBE ASSEMBLY (412 HI AFT)	NTS
DATE	09.09.30	COPYRIGHT © 2001 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSES OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

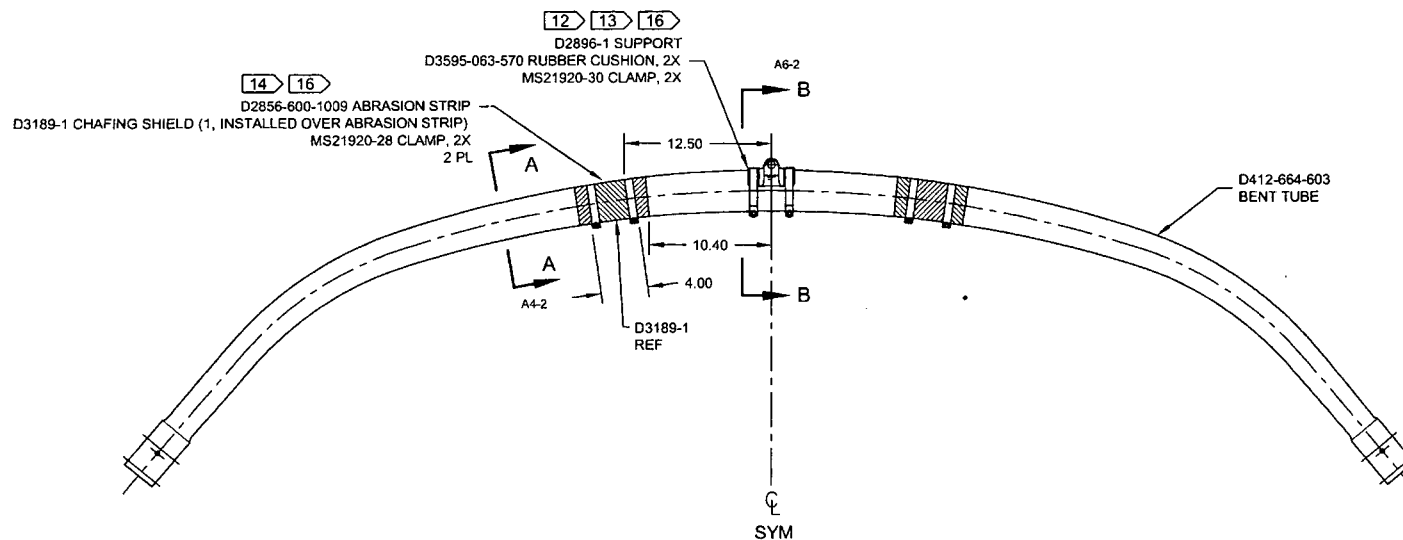
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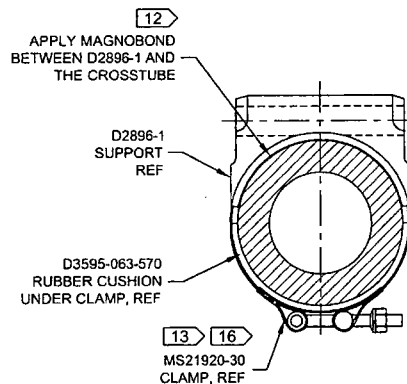
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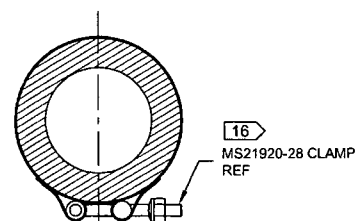
NOTE: Date & initial all entries



D212-664-243
ASSEMBLY DETAIL E



SECTION B-B D4-2
SCALE 4X



SECTION A-A C6-2
SCALE 4X

RELEASED
2009-10-28
NMP

w/o 553-42

DESIGN	PH	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	9	DRAWING NO.	REV. E
MFG. APPR.	10	D412-664-243	SHEET 2 OF 4
APPROVED	11	TITLE	SCALE
DE APPR.	12	CROSSTUBE ASSEMBLY (412 HI AFT)	NTS
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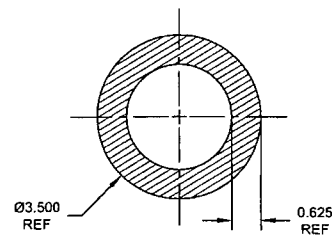
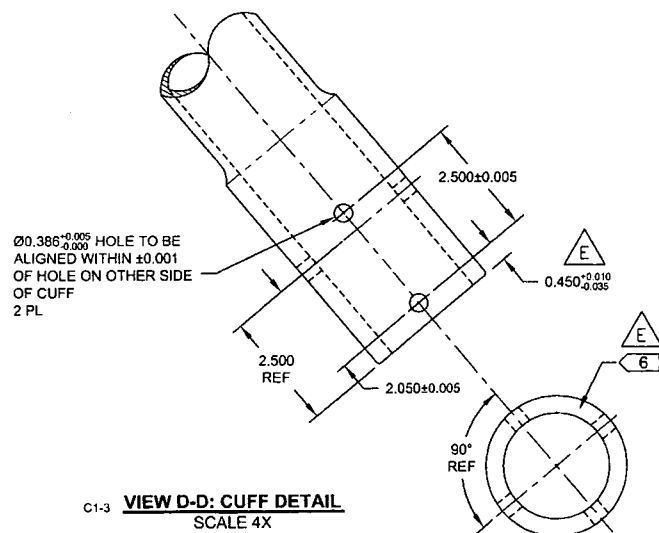
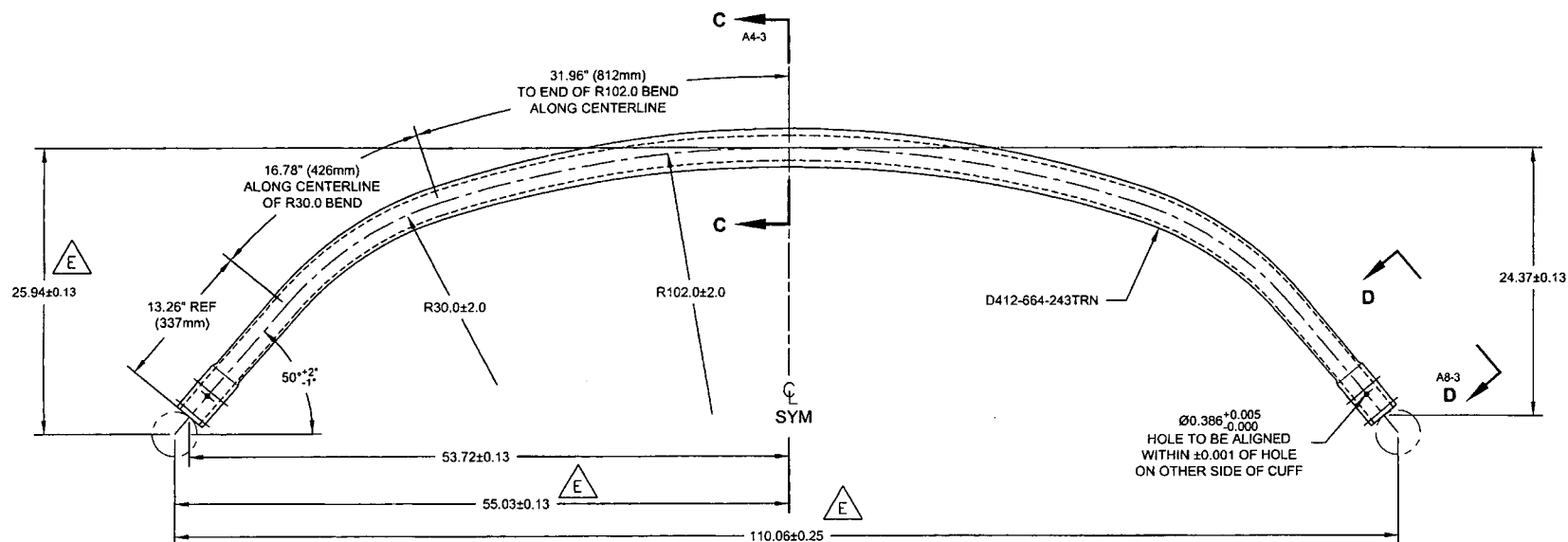
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D412-664-603 10
BENDING AND DRILLING DETAIL E



RELEASED
 2009-10-29
 MP

W/LD 55542

DESIGN	<i>PH</i>	DART AEROSPACE LTD
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA
CHECKED	<i>Q</i>	DRAWING NO. REV. E
MFG. APPR.	<i>SS</i>	D412-664-243 SHEET 3 OF 4
APPROVED	<i>AP</i>	TITLE SCALE
DE APPR.	<i>4</i>	CROSSTUBE ASSEMBLY (412 HI AFT) NTS
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